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Report Title:
Inequalities in the Gamut of Lack and Prosperity in Nigeria:
New Local Level Evidence and Spatial Profiles

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Abstract

Since the beginning of this millennium, successive Government initiatives have focused on increasing prosperity and bridging welfare divides for all areas in Nigeria. These objectives are being pursued in line with the United Nations Millennium Declaration and core principles enshrined in the Nigerian Vision 20-20-20. Despite enormous investment in poverty mitigation programmes, more than half of Nigerians still live in relative poverty with over a third of the population languishing in extreme poverty. In this report, we use novel geodemographic modeling techniques to profile and interpret the correlates of lack and prosperity across Nigerian Local Government Areas (LGAs). We discovered that the magnitude of inequality in the distribution of wealthy and poorer households vary significantly within and between community types. Findings from our analysis also show that different community types are better suited to different pro-poor policy initiatives. The research discussed in this report represents the first attempt to use geodemographic techniques to model and visualize spatial inequality in welfare across Nigerian LGAs. The report provides evidence that there is significant value in using such techniques to better target populations and households most at-risk and to support poverty alleviation initiatives.

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2 Context

With a population of over 150 million people, Nigeria is the most populous country in Africa. On average, population grew at a rate just over 3% in the first eight years of the current millennium (NPC and OSSAP-MDGs, 2010). Comprising an area totaling 356,669 square miles, Nigeria has a rich base of human capital and natural resources. The country also ranks among the top ten oil exporters globally. Nigeria maintains a high profile economic and political status on the African continent. Indeed some commentators (Gordon, 2003) agree that several African countries have their economic stability hinged on the political and economic stability of Nigeria.

In spite of its huge potential, the country is classified as a low-income country.¹ Between 1990 and 2005, an estimated 71% of the population lived on less than one United States Dollar a day (World Bank, 2007). The proportion of Nigerians living in relative poverty currently stands at 54% (NPC and OSSAP-MDGs, 2010) and needs to fall to about 21% if the country expects to meet one of the targets of the Millennium Development Goal (MDG)² aimed at eradicating extreme poverty and hunger. The Nigerian Government believes there is an average possibility of achieving this feat even though there is weak institutional support for programmes, projects and policies that may ultimately lead the country towards the goal (NPC and OSSAP-MDGs, 2010).

We have argued that there is value in tackling developmental challenges from the roots and that intelligent analytics are needed to understand and drill down to local levels of governance (Ojo et al., 2012; Ojo and Ezepeue, 2011). Our position now appears to be resonating within the corridors of central government. From the most recent Nigerian MDG Report, we extract the following testimonial on the significance of undertaking local level analytics:

“... local governments are closer to the grassroots in providing basic services, so their actions or inactions impact directly upon the MDGs” (NPC and OSSAP-MDGs, 2010, p.8).

In spite of the importance of pursuing a local agenda when evaluating progress towards national development targets within the MDG framework or other important national policy programmes, we discovered it is hard to come across evidence of such previous work.

¹ The World Bank groups countries for operational, analytical and other purposes. Based on the Bank's income classification of member countries, Nigeria is a low-income country. For more details on the World Bank income classification see: <http://data.worldbank.org/about/country-classifications>.

² The Millennium Development Goals (MDGs) are eight international development goals that all 192 United Nations member states and at least 23 international organizations have agreed to achieve by the year 2015.

In this report, we illustrate the extent to which spatial analysis and geodemographic modeling may be of benefit for expounding *real* issues affecting the citizenry at localised spatial scales. Such benefit can complement the efforts of the Nigerian Government; the Office of the Senior Special Assistant to the President on MDGs (OSSAP-MDGs); academics and researchers; and other local and international stakeholders within the Nigerian development footprint, in their endeavours to address a variety of issues associated with inequality in lack and prosperity amongst Nigerians.

2.1 Investigating Poverty and Wealth in Nigeria

Tracing the welfare of Nigerians and the Nigerian economy back to the 1970's reveals that the country was designed to function and take its place as one of the major economic giants globally. Nigeria thrived significantly on agriculture and about 60% of Nigerians still work within the agricultural sector (NPC and OSSAP-MDGs, 2010). The vibrancy of Nigeria's agricultural sector pre-1980 contributed significantly to industrial development and what was described by Ali-Akpajiak and Pyke (2003) as a growing pool of infrastructure.

The decades following this period saw the country witness numerous military coups and the expansion of the petroleum industry. Alongside some other problems, a long period of political instability and unsustainable oil exploitation has contributed to the blurring of the bright future of the Nigerian economy with many of its citizens surviving beneath poverty lines.

The problem of poverty has been described as the largest singular problem confronting the Nigerian populace (Ogunbodede, 2006). In the midst of vast amounts of natural resources and human capital (Canagarajah and Thomas, 2001), Nigeria, which was categorised as one of the top 50 wealthiest economies in the 1970's has today become one of the 25 poorest countries (Akanbi and Du Toit, 2011).

According to the National Bureau of Statistics (NBS), it was estimated that in 1980, about 65 million Nigerians lived in relative poverty resulting in an incidence of 28% (NBS, 2005). This figure rose to 75 million people and a depth of 46% in 1985. Although the incidence of poverty had reduced marginally to 43% by 1992, there was a sharp rise to 65.6% by 1996. At this time, it was estimated that about 102 million Nigerians were living in relative poverty (NBS, 2005). Approximately ten years later, more than half of the country's population (54%) still lives in relative poverty while an estimated 35% lived in extreme poverty as at 2007 (NPC, 2007).

Poverty has a multidimensional nature; it presents multifaceted challenges; and it can be difficult and contentious measuring the phenomenon. Common methods and approaches used range from small area estimation techniques to household level analysis. Apart from the purpose of the poverty measurement indicator and the philosophy of the practitioner, Davis (2003) also identified data availability, analytical capacity and cost as drivers of poverty measurement.

One of the indicators employed within the MDG framework for monitoring relative poverty levels is the share of poorest quintile in national consumption. For the purpose of the research account presented in this report, we analysed data for five poverty quintiles sourced from the NBS, Abuja, Nigeria. We adopt a geodemographic modeling approach by linking the data with Nigeria's first geodemographic classification system (Ojo et al., 2012) to help us quantify and understand the varied distribution of poverty and wealth across different community types thereby revealing some of the correlates of relative advantage and/or disadvantage.

2.2 Overview of the Nigerian LGA Geodemographic System

Concisely, a geodemographic system is an area classification that simplifies a large and complex body of multivariate and multidimensional information about people, where and how they live, work and recreate. Geodemographic systems are developed based on geographical ontologies that similar people with similar characteristics are more likely to live within the same locality and that such locality types will be distributed in different locations across geographical space (Harris et al., 2005; Sleight, 1997; Brown, 1991).

In this report, we use the Nigerian Local Government Area (LGA) Geodemographic Classification System and Profiler (NIGECS)³, which is a product of advanced academic research conducted by Dr Adegbola Ojo at the University of Sheffield, United Kingdom (Ojo et al., 2012).

The Nigerian geodemographic system encapsulates spatially referenced datasets for the year 2006 derived from the census and other national surveys sourced from the NBS. Almost 35,000 data points spreading across 10 themes were used to create NIGECS following a rigorous selection exercise from a pool of nearly half a million data points.

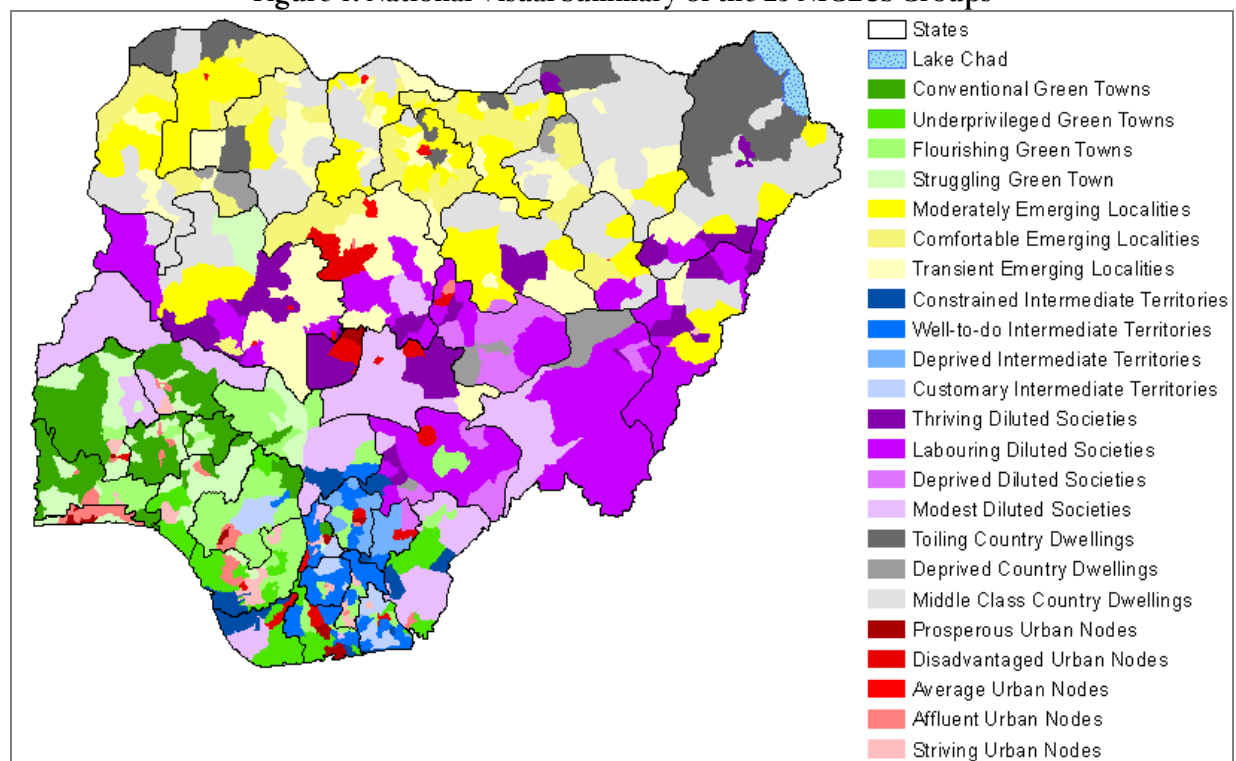
³ NIGECS is the first African open-source and peer reviewed small area segmentation system. It is freely accessible on the internet. For more details on NIGECS please see: <http://nigerianlgaclassification.com/>

The ten broad themes that the data cover include:

- Agriculture
- Demographic
- Education
- Employment
- Health
- Household Composition
- Household Infrastructure
- Housing
- Socio-economic
- Women and Children

All the 774 LGAs in Nigeria has been placed into one of 6 Super-groups, and into one of 23 Groups and finally into one of 57 Sub-groups. This hierarchical structure of super-groups, groups and sub-groups shown in Appendix 1 allows for greater flexibility and means that analysis, visualisation and reporting can be done at three levels. Figure 1 is the map of Nigeria showing the spatial distribution of the 23 Groups across the 774 LGAs.

Figure 1: National Visual Summary of the 23 NIGECS Groups



For comprehensive descriptions and detailed profiles of the typologies, please see: www.nigerianlgaclassification.com

The Nigerian geodemographic approach is hinged on the proposition that areas that are socially or economically disadvantaged differ in terms of their pathology of disadvantage. We believe that in qualitative terms, different types of disadvantaged or even advantaged areas exist; leading also to variations in the levels of advantage or disadvantage. Reflecting on this proposition, we consider that different forms of social and economic disadvantage derive from different chronological trajectories and therefore different area types are often well matched to quite different priority area programmes (Ojo and Ezepeue, 2011).

2.3 Structure of the Report

The NBS supplied survey statistics relating to five poverty quintiles. The subsequent sections of this report are structured to highlight key findings and present visual summaries of those data analysed.

The analysis detailed in this report is novel in that provides the first opportunity of conducting a national assessment of some of the indicators at a more localised geographical scale using a geodemographic approach. Additionally, the analyses are also based on recent statistics from 2006.

In the third section of the report, each of the five poverty quintiles are linked with the Nigerian segmentation system and geo-statistically profiled to elucidate geodemographic correlates and spatial patterns that could inform action planning and policy making at the local scale.

In section four, we discuss a novel model of relative welfare for each of the 774 LGAs in the country. The model takes cognizance of the performance of different LGAs by poverty quintile. We further plug the resulting model into the independent geodemographic system to provide additional insight on welfare disparities.

In the final section of the report, we conclude by providing some policy relevant recommendations.

3 Geodemographic Variations across Poverty Quintiles

Throughout this report, we refer to index values derived for different geodemographic typologies and extrapolated across the country. Indices are computed for the different poverty quintiles by geodemographic types such that an index score of 100 indicates a level of occurrence of that variable, such as poverty quintile 1, equal to the national mean or expected level. An area with an index of 150 would indicate a level 50% above the national average and a score of 200 twice the expected rate (Harris et al., 2005).

The indices are used to describe the propensity for a household within an LGA to belong to any of the five poverty quintiles relative to the national average distribution.

3.1 Poverty Quintile 1: Social and Spatial Disparities

In proportional terms, poverty quintile 1 represents the top fifth (i.e. top 20%) of core poor group of people in the Nigeria. Every LGA in the country has certain proportions of this population groups.

Table 1 shows the results of preliminary analysis of the data at the Super-group level of the Nigerian classification system.

Table 1: Penetration Report for Quintile 1 Households by NIGECs Super-groups

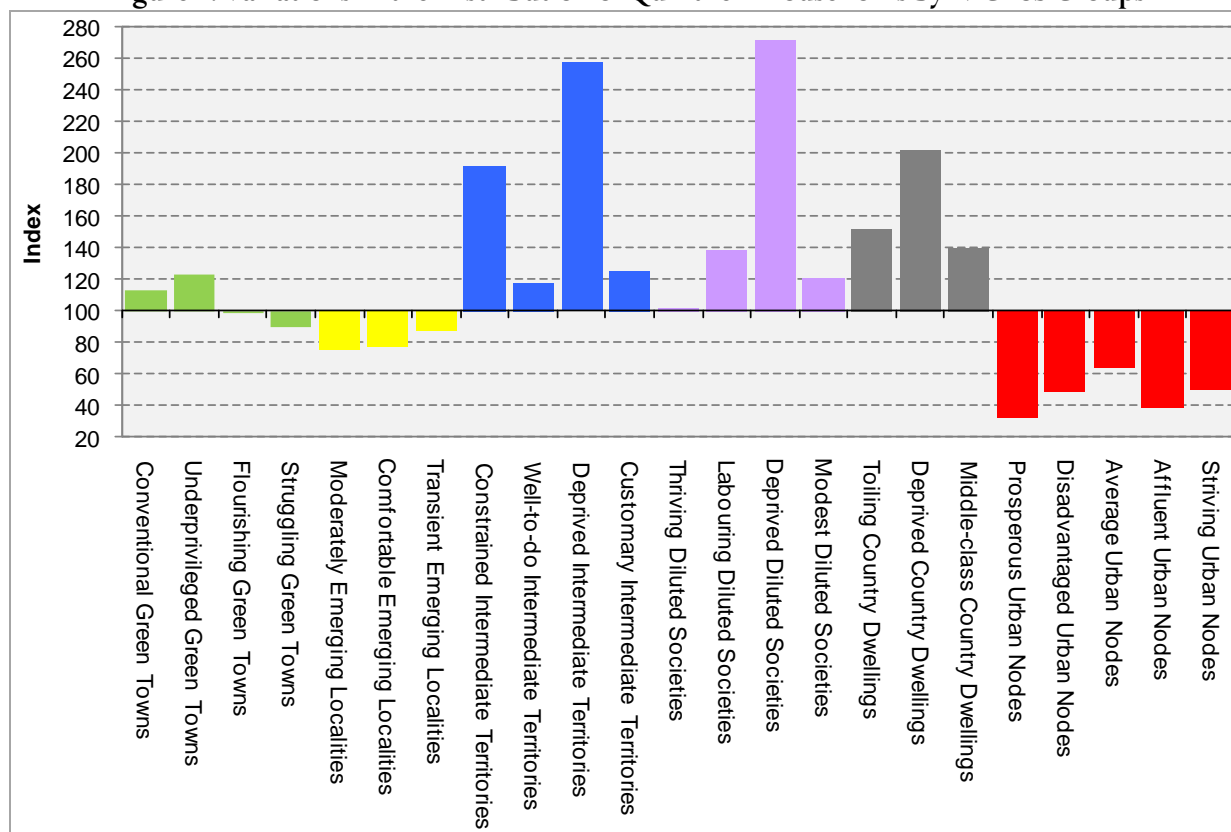
Super-groups	Household Share (%)	Rate (per 100 households)	Index
Green Towns	25	22.57	103
Emerging Localities	14	17.44	80
Intermediate	20	31.59	145
Diluted Societies	18	30.65	140
Country Dwellings	13	32.30	148
Urban Nodes	10	9.52	44

For all quintile 1 households, Green Towns have the largest national share of 25%. This does not necessarily make these areas priority target areas as revealed by their index score of 103. The penetration index, which is indicative of the proportion of quintile 1 households relative to all households, shows that if one were to target LGAs characterised as Green Towns for pro-poor programmes, the potential success rate is just marginally above the national mean.

Based on evidence contained in Table 1, the pattern of penetration of households within this poverty quintile is closely associated with urban-rural dichotomy. In general, poverty quintile 1 households appear to be over-represented within the countryside. Country Dwellings have the highest rates of poverty quintile 1 households in the country. The indices also reflect relatively high likelihood rates of households in this quintile concentrated in Intermediate Territories and Diluted Societies. When combined together, these three geodemographic typologies sum up to 51% of the share of all quintile 1 households. This figure is very close to the 54% of the Nigerian population said to be living in relative poverty.

This initial exploration provides some background. However, evidence from comparative analysis of geodemographic systems has shown that for any system, better discrimination may be achieved at a higher hierarchy where data is better-disaggregated (Leventhal, 1995; Ojo, 2009). Additionally, in a situation where disposable resources are limited, it is ideal to work at a higher level of the hierarchy like Groups or Sub-groups.

Figure 2: Variations in the Distribution of Quintile 1 Households by NIGECS Groups



The data was subsequently linked to the Group level of the geodemographic system to further demystify the patterns of concentration of quintile 1 households. Results from the analysis are summarised in Figure 2.

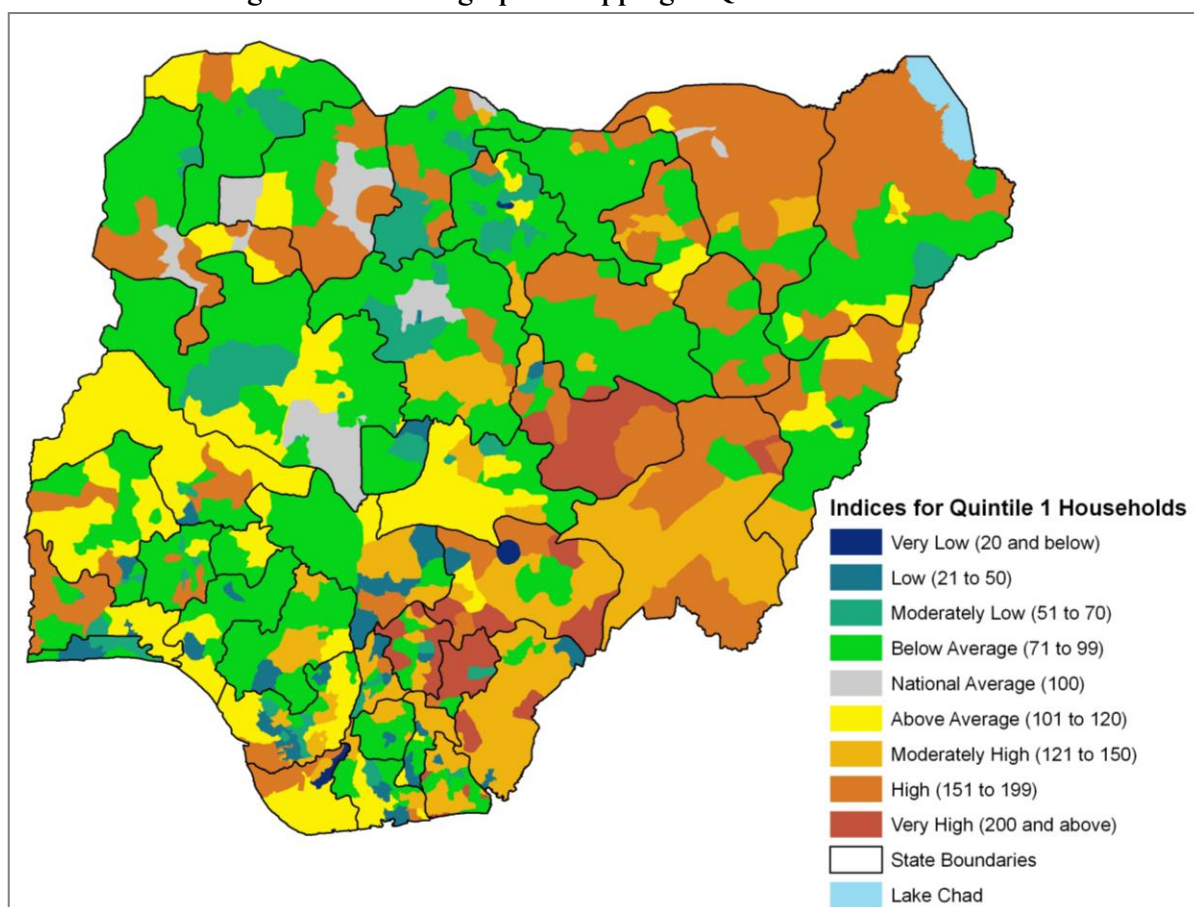
The first observation, which also conforms to the pattern of findings at the Super-group level, is that all Groups within Intermediate Territories, Diluted Societies and Country Dwellings record values above the national mean. However, there are significant variations in the magnitudes of the patterns of these indices. The chance of a household being classed as quintile 1 within Deprived Diluted Societies and Deprived Intermediate Territories is almost treble the national mean while that of Deprived Country Dwellings is about double the national average. These are the three peaks evident in the chart above.

Quintile 1 households tend to concentrate in areas where adult literacy levels are generally low and the household head is not educated. Household sizes are typically large and there is a large concentration of widows especially in the Deprived Intermediate Territories. Unemployment and underemployment are also critical causation factors within Deprived Intermediate Territories. Although unemployment rates are just above average within Deprived Diluted Societies and Deprived Country Dwellings, most people tend to be self-employed in agriculture without mechanised farming.

Even though people tend to own their homes within these areas, most homes lack basic livelihood and sanitation facilities. Another major problem confronting residents is the distance they have to travel to get to their nearest public facilities. Many have to spend over an hour.

The spatial disaggregation of penetration rates indices calculated above can be useful for visualisation as shown in Figure 3.

Figure 3: Geodemographic Mapping of Quintile 1 Households



It would seem from the map output that the concentration of households with the greatest likelihood to be classed as quintile 1 lie within the South-Eastern corner of the country, spreading through the eastern end of the North-Central to the North-Eastern corner. However, one can also detect from the map, pockets of LGAs in the South-West and North-West.

3.2 Poverty Quintile 2: Social and Spatial Disparities

Although the UN MDGs focus only on the indicator for quintile 1, we believe it is also important to study spatial patterns of the other poverty quintiles. An understanding the types and levels of variation existing within the other poverty quintiles may prove useful for shaping social policies.

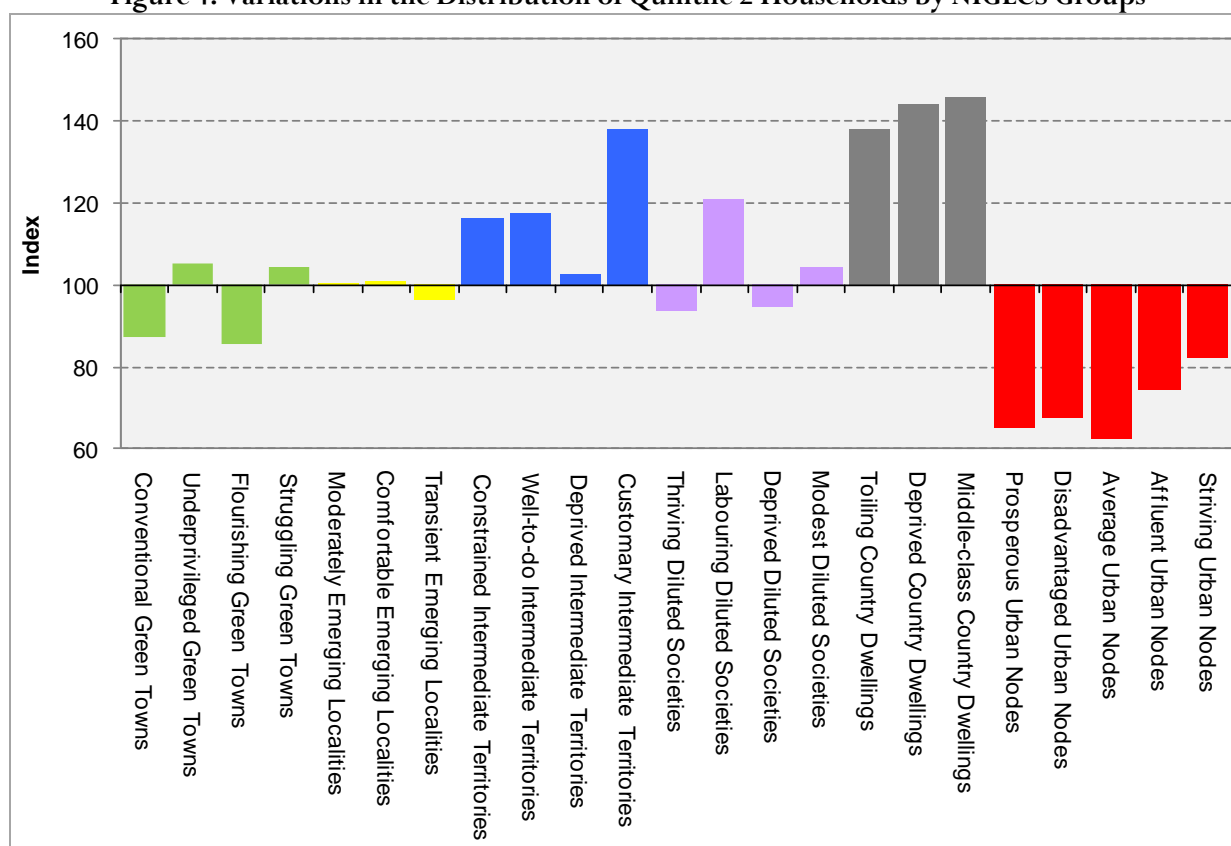
While quintile 2 households in Nigeria may not necessarily be classed as being in core poverty, they are still poor because their welfare and consumption levels are below internationally accepted standards (NPC, 2007; NBS, 2005). Nationally, for every 1000 households, about 209 belong to this quintile according to the statistics received from the NBS.

When linked to the Nigerian geodemographic system, Green Towns have the largest national share of 24%. This is again perhaps due in part to the large housing density within these areas. Emerging Localities and Urban Nodes share 34% of households within this poverty quintile and are closely followed by Intermediate Territories which have 16% of their households defined as quintile 2. Diluted Societies and Country Dwellings have the lowest national shares of 14% and 13% respectively.

Of greater significance however is the rate index of households within the quintile. In spite of their lower national household shares, only Country Dwellings, Intermediate Territories and Diluted Societies record rates above the national mean with the highest index of almost one and half times the national average found within Country Dwellings.

The pattern of inequality in the distribution of quintile households is made vivid in Figure 4.

Figure 4: Variations in the Distribution of Quintile 2 Households by NIGECS Groups

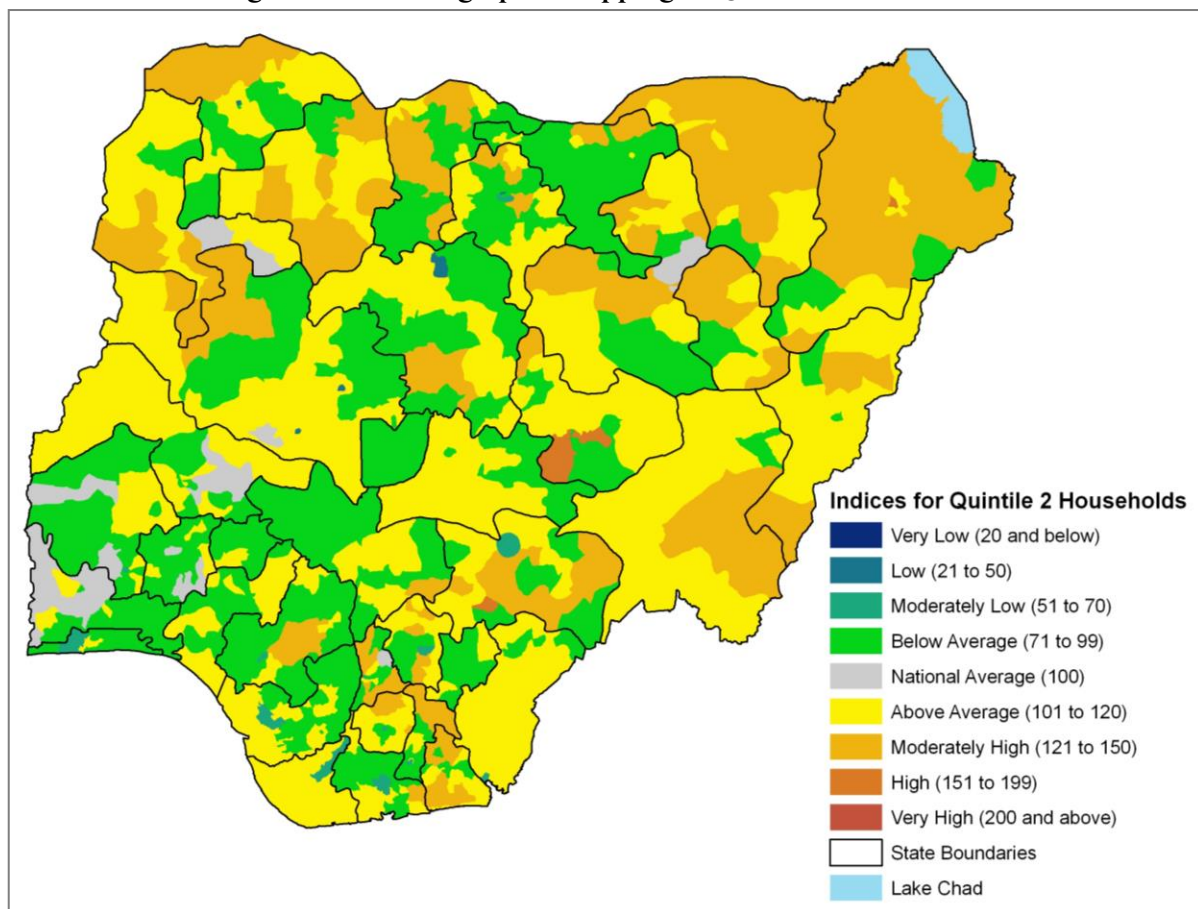


All NIGECS Groups within the Country Dwellings have a strong likelihood to have quintile 2 households. There is also a moderately high chance for households in Customary Intermediate Territories to belong to the poverty quintile.

Some of the key geodemographic correlates of quintile 2 households include:

- relatively high dependency ratios and polygamous marriage;
- employment within the informal sector;
- low literacy levels;
- residents travelling over an hour to their nearest food market and source of public transportation;
- the use of religious hospitals;
- widowed households;
- many residents drink water from unprotected sources like wells or open rivers; and
- high levels of diarrhea prevalence amongst young children.

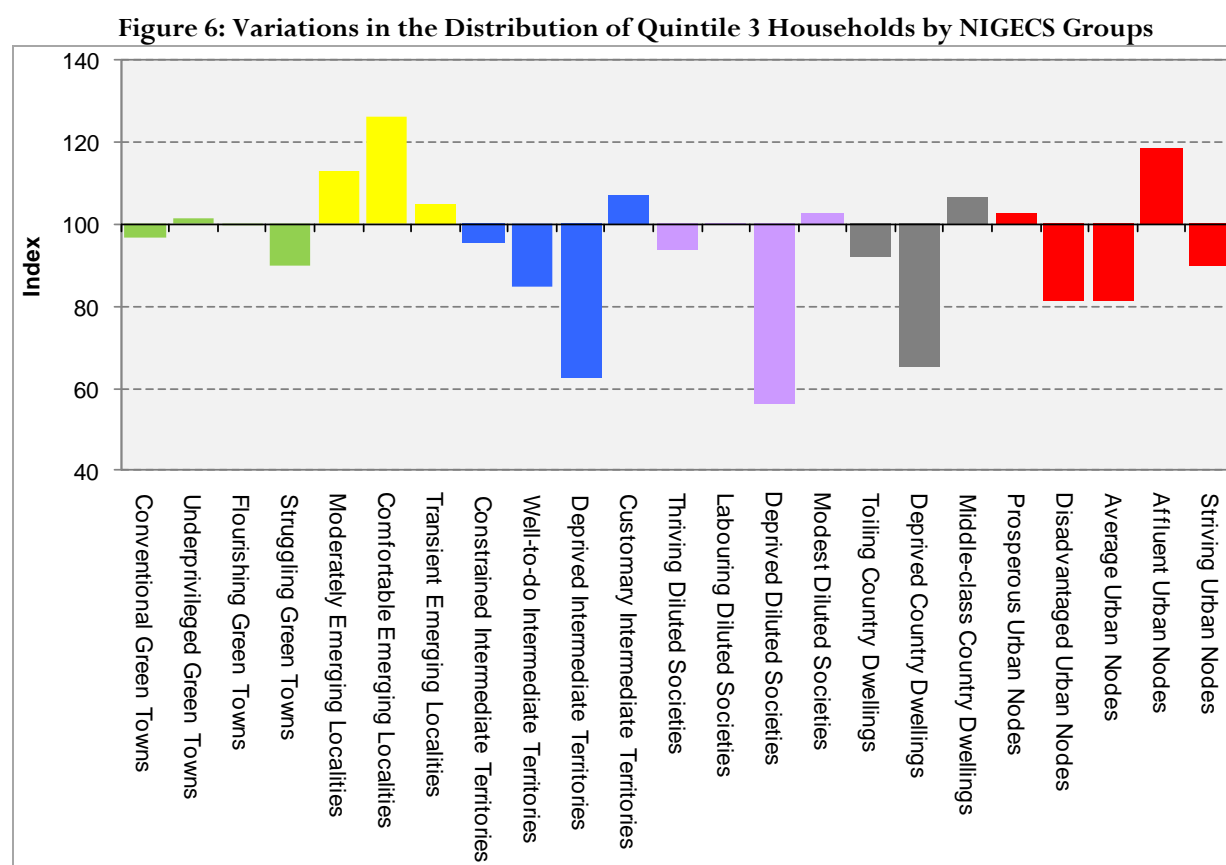
Figure 5: Geodemographic Mapping of Quintile 2 Households



In Figure 5, we show the spatial pattern of the likelihood of LGAs to comprise households in this poverty quintile. From the map, it is obvious that households within the South-Western corner of the country have the least probability of quintile 2 characteristics.

3.3 Poverty Quintile 3: Social and Spatial Disparities

The first evidence from the chart shown in Figure 6 is the gradual transition of better welfare to Emerging Localities and Urban Nodes from the other four geodemographic typologies. Emerging Localities especially the Comfortable Emerging Localities where polygamous marriage is common and households typically comprise more than six people have the greatest representation of quintile 3 households. Self-employment is also a key feature of residents of these areas.



It is also pertinent to note that quintile 3 households are more likely to consist of separated couples and middle-aged persons. In such scenarios, literacy levels are typically higher than the national average distribution.

Figure 7: Geodemographic Mapping of Quintile 3 Households

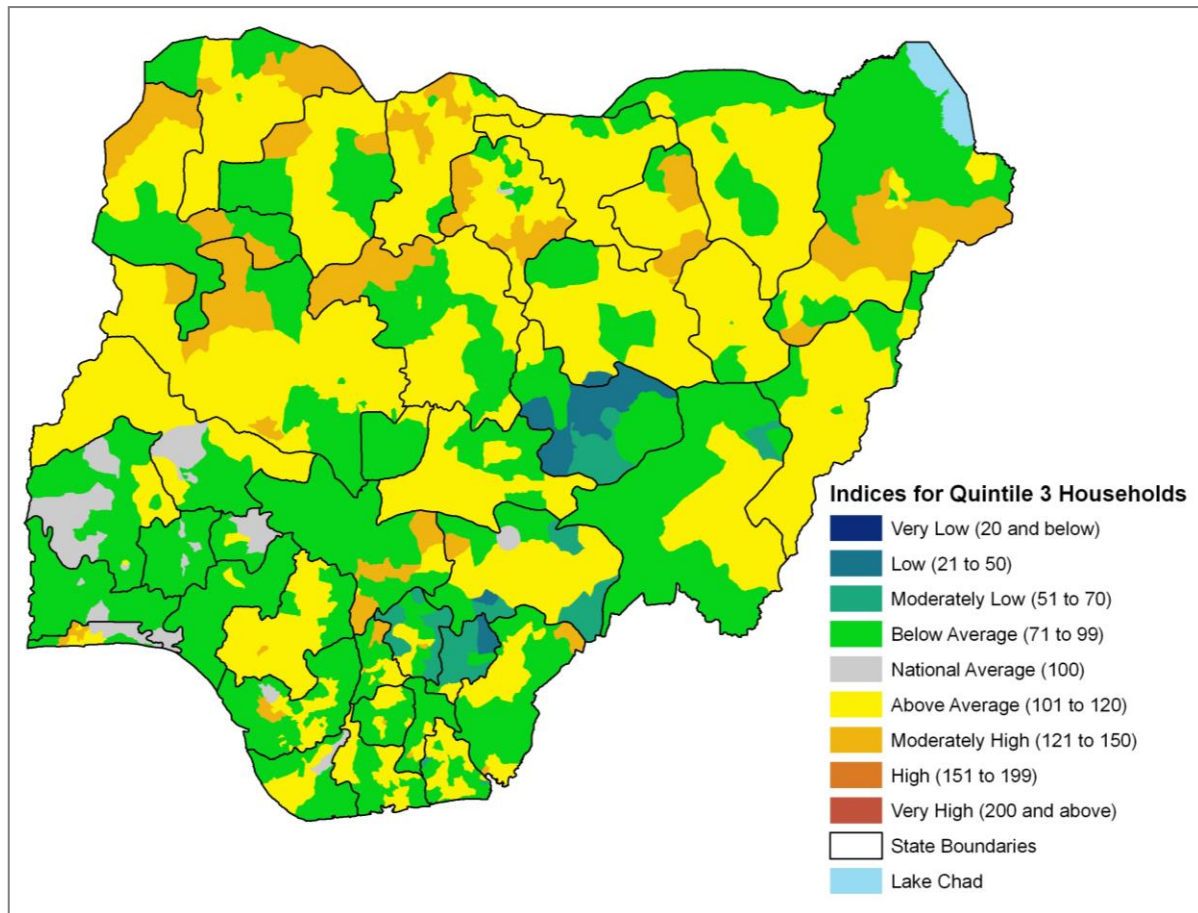


Figure 7 shows the spatial distribution of the propensity for households to belong to poverty quintile 3. From the map, there appears to be a seemingly north-south divide. If we hypothesise this quintile as representing those households that fall into the middle ground on the Nigerian societal hierarchy, we may be able to provide further explanations for the so-called *disappearing middle*.

Indeed, there are strong arguments that only a privileged few belong to the upper class and that they keep drifting further away from the poorer segments of society thereby widening the chasm of inequality that exists within the Nigerian social system (Aigbokhan, 2000).

However, in connection with the hypothesis that the middle class is disappearing, we can deduce from the map that unlike in quintiles 1 and 2, for quintile 3, most areas appear to be transiting closer to the national average. What this suggests is that inequality in the spatial concentration of the middle class is diminishing as it is increasingly becoming more difficult to discriminate for or determine the characteristics of households within this social class.

3.4 Poverty Quintile 4: Social and Spatial Disparities

Directly above quintile 3 are the next 20% of households which are deemed to be constituted by residents of a better socio-economic and welfare status.

Initial analysis of the data supplied by the NBS revealed that for every 1000 households, about 191 belong to quintile 4. This is much lower than the value for the previously examined quintiles and conforms to the notion that as one moves up the ladder of social welfare in Nigeria, there are fewer households.

Table 2: Penetration Report for Quintile 4 Households by NIGECS Super-groups

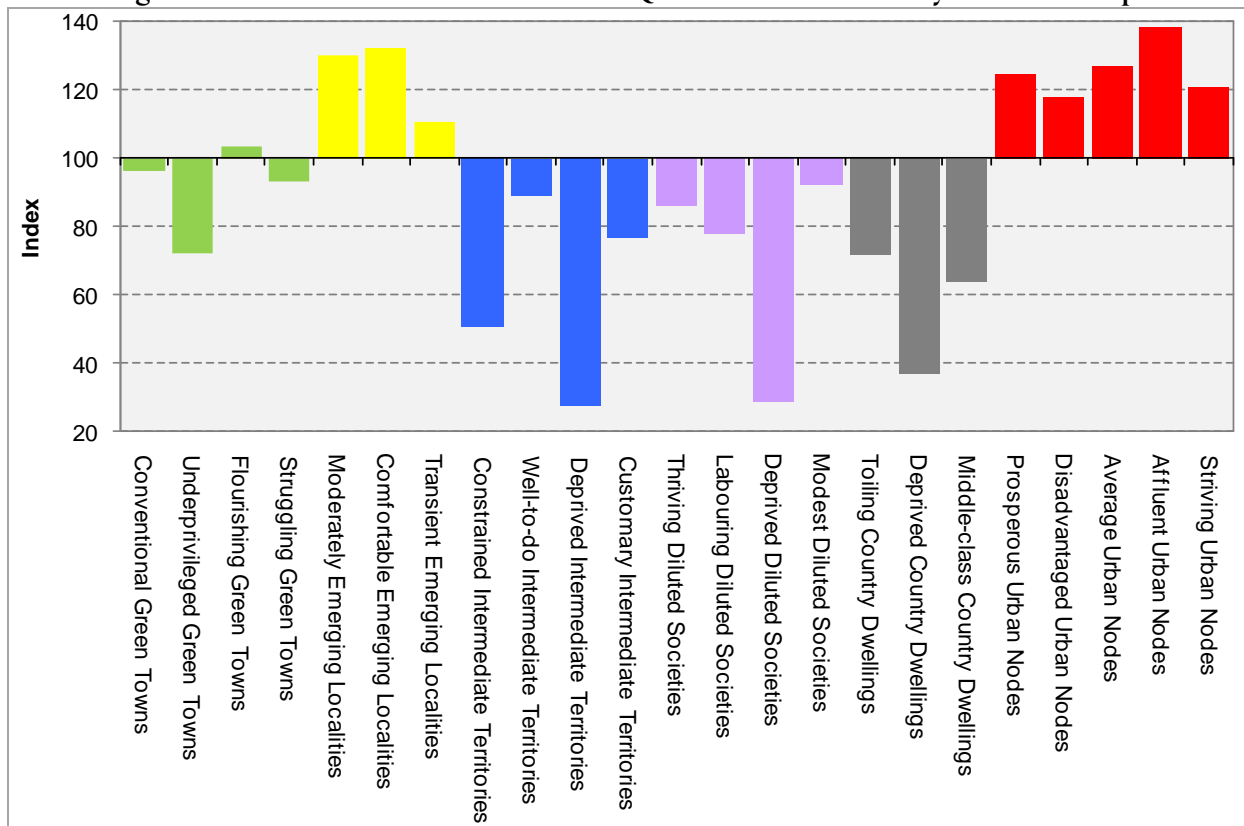
Super-groups	Household Share (%)	Rate (per 100 households)	Index
Green Towns	23	17.79	93
Emerging Localities	21	23.75	124
Intermediate	10	14.19	74
Diluted Societies	10	14.92	78
Country Dwellings	6	12.26	64
Urban Nodes	30	24.93	131

Table 2 shows the penetration report for households in quintile 4 across NIGECS Super-groups. Out of all households within the quintile, Urban Nodes and Green Towns together account for more than 50%. However, the Urban Nodes have the greatest chance of containing a quintile 2 household. They are closely followed by Emerging Localities, which have a likelihood of 24% higher than the national mean.

All the other four geodemographic typologies have below average representations with the Country Dwellings having the least rate index. Again, this initial data exploration concurs with the propensity for better well-being in Nigeria to be associated with urban centres (Aigbokhan, 2000).

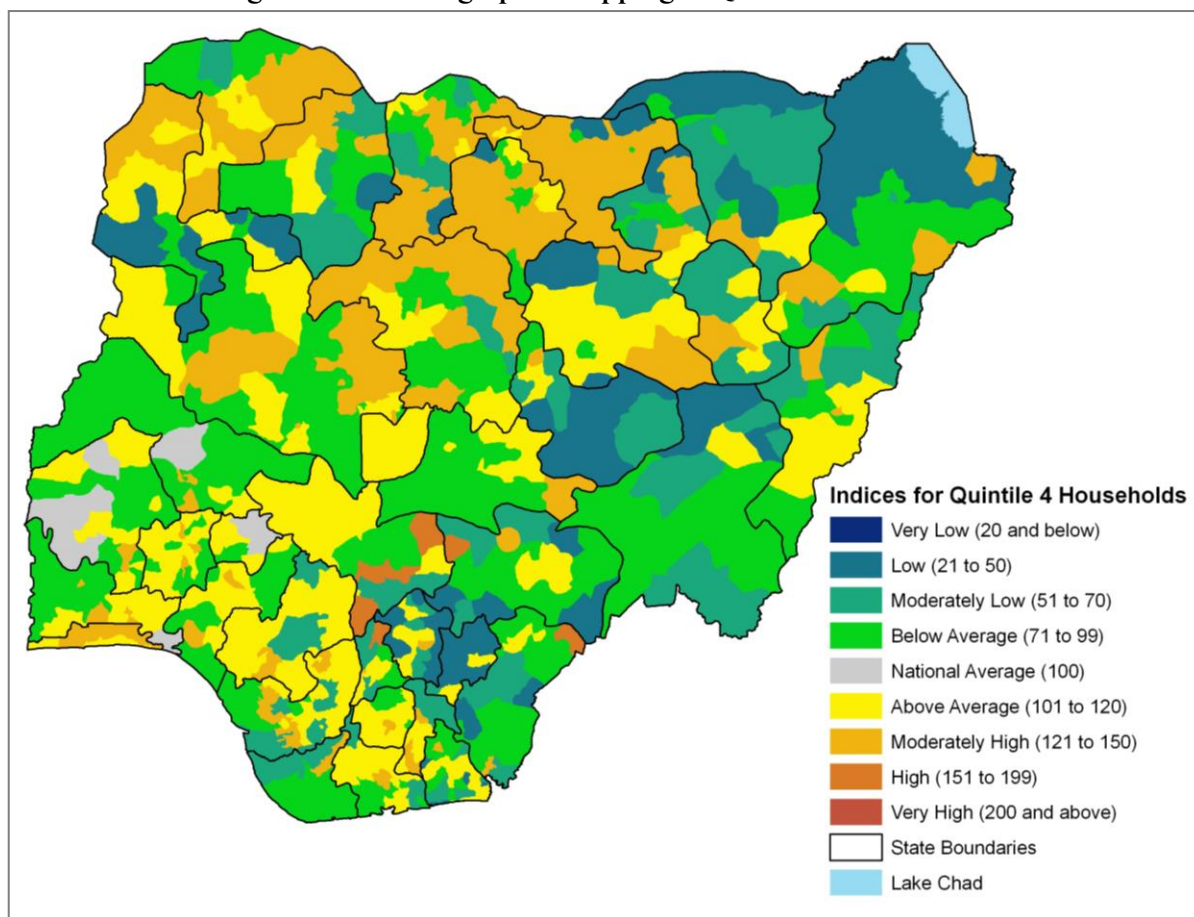
As shown in Figure 8, it is not so surprising that the system is again able to uncover above average probabilities for quintile 4 households to be found in the Urban Nodes and Emerging Localities. Leading the pack are the Affluent Urban Nodes and the Comfortable Emerging Localities.

Figure 8: Variations in the Distribution of Quintile 4 Households by NIGECS Groups



What is perhaps more striking is that within Deprived Intermediate Territories, Deprived Diluted Societies and Deprived Country Dwellings, there is a chance of less than half the national mean for a household to belong to this better-off quintile. Again, this provides some understanding of the magnitudes of and direction of the unequal distribution of welfare among the population groups.

Figure 9: Geodemographic Mapping of Quintile 4 Households



The spatial patterning of the results from the analysis shown in Figure 9 does not necessarily reveal any regional concentration but underscores the fact that major cities and urban centres are more likely to contain households within the quintile.

3.5 Poverty Quintile 5: Social and Spatial Disparities

At the top of the welfare and social hierarchy lies the quintile 5. Households belonging to this quintile are regarded as the wealthiest in the society (Aigbokhan, 2000). In the categorisation used for this analysis, quintile 5 households refer to the top 20% richest households in the country.

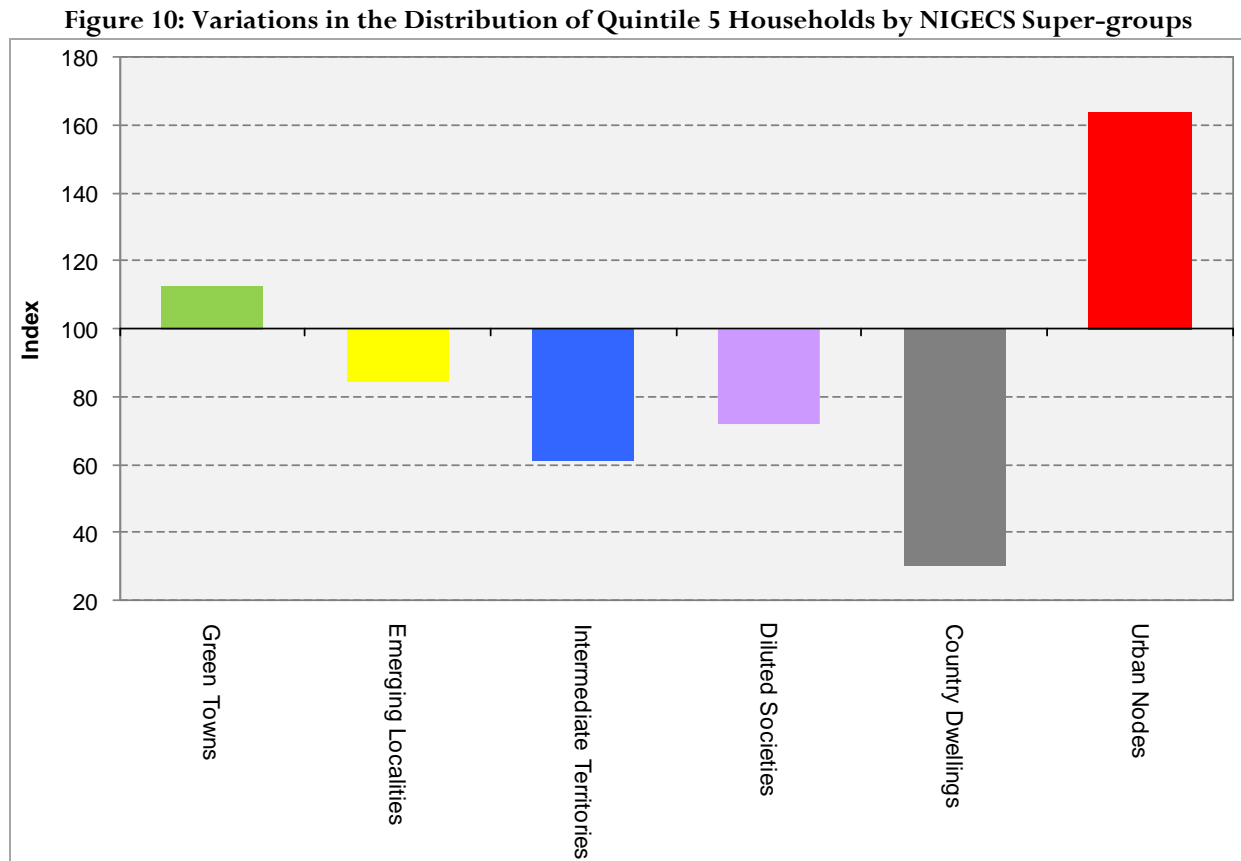
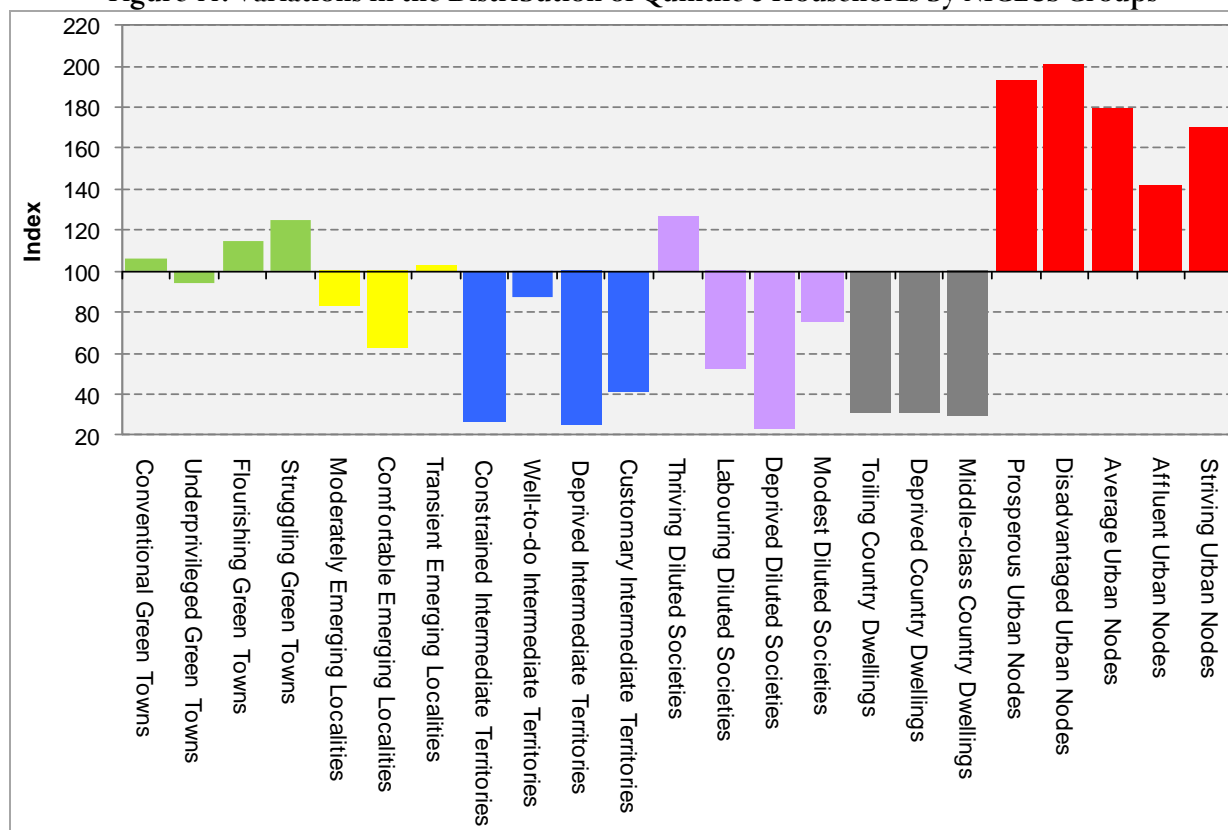


Figure 10 shows a disproportionate concentration of quintile 5 households within the Urban Nodes. The magnitude of disparity is stunning. The only other geodemographic cluster with an above average representation at the Super-group level of analysis is Green Towns. Again, there is strong evidence that households within Country Dwellings have less than half the chance of the national mean to belong to quintile 1.

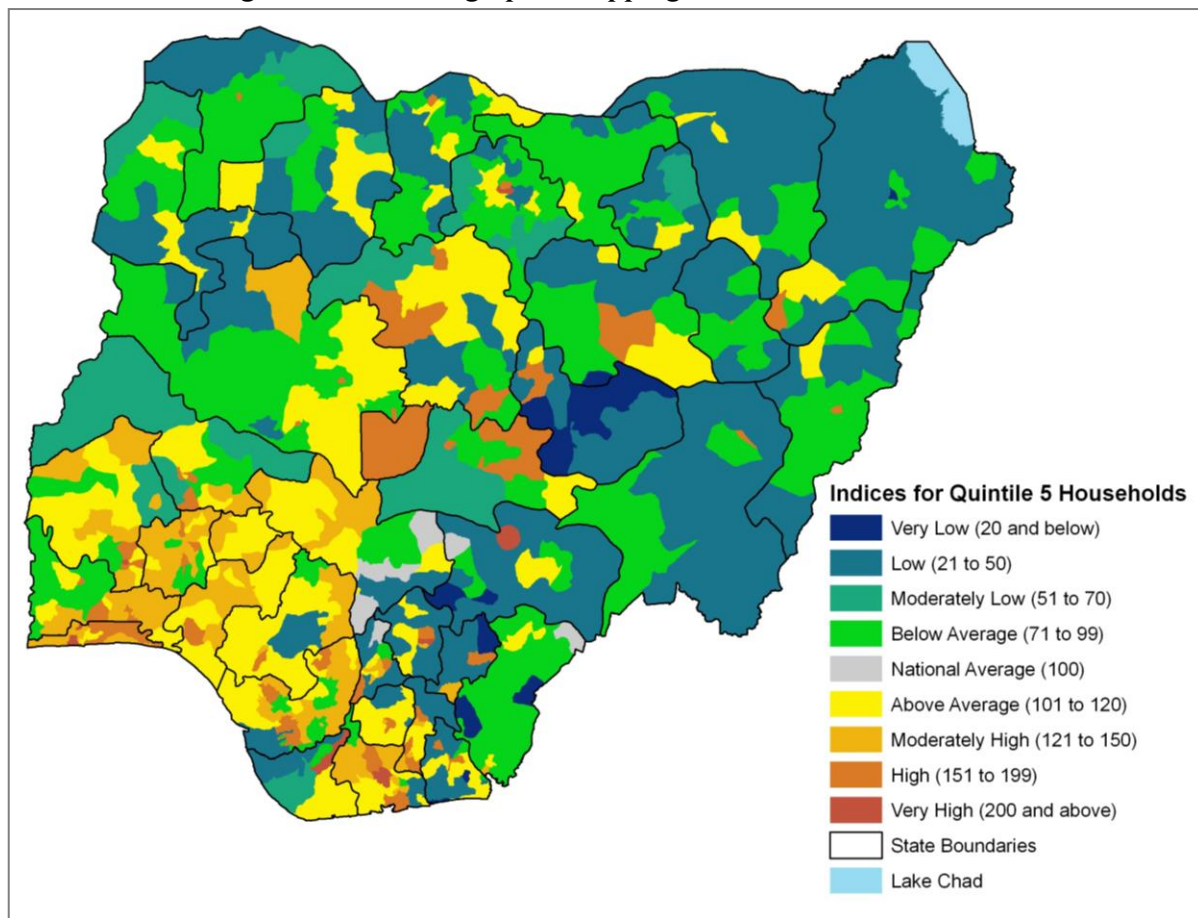
Figure 11: Variations in the Distribution of Quintile 5 Households by NIGECS Groups



If we further disentangle quintile 5 households by NIGECS Groups, it yields the pattern in Figure 11. The dominance of the Urban Nodes is evident though surprisingly, the Disadvantaged Urban Nodes present the greatest rate index (about double the national mean) for quintile 5 households. An important factor contributes to this high incidence is the disproportionate concentration of Disadvantaged Urban Nodes population in Abuja, the Federal Capital Territory. About 55% of the population of Abuja falls into this NIGECS Group. Although the incidence of unemployment is highest within these areas, public sector employment is also highest for the Disadvantaged Urban Nodes than for any other Group. However, numerous pensioners do not get paid regularly.

Those who are economically active have just an average representation. It is also not uncommon to find a large representation of private formal entrepreneurs within these areas (another implication of the Abuja effect) and the dominant presence of people in rented accommodation. Some other key geodemographic correlates of residents include high levels of ownership of mobile phones and personal computers and high rates of vehicle ownership; much higher than motorcycle ownership.

Figure 12: Geodemographic Mapping of Quintile 5 Households



The spatial patterning of quintile 5 households extrapolated at LGA scale and shown in Figure 12 is a sharp contrast to the pattern for quintile 1. Major cities like Abuja and Lagos have strong concentrations of this quintile relative to the national distribution.

4 Composite Indicators of Welfare and Spatial Inequality

The research findings presented in Section 5 helps to buttress the fact that within different areas, there are varying magnitudes in the types and levels of advantage or disadvantage relating social class structure. By harmonising the pattern of variations across the five quintiles, one may be able to account better overall for the direction, depth and spread of welfare in Nigeria.

In numerous developed societies, deprivation indices are widely used and remain of value particularly within the public sector and for academic research. Such indices are computed from time to time for relatively small geographic areas ranking them from least deprived to most deprived. Different methods exist for constructing such composite indicators (OECD, 2008). In the United Kingdom for instance, the 2007 Index of Multiple Deprivation (IMD) takes into account seven domain specific deprivation indices and fuses them together. Hence deprivation can be assessed in terms of income; employment; health and disability; education skills and training; barriers to housing services; living environment; and crime (CLG, 2008).

Nigeria has never had measurable indices of deprivation or welfare for its LGAs. Such indices can be important for discriminating relative levels of deprivation and provide a useful resource for trend analysis if computed over time. In this study, a method was developed to fuse the five poverty quintiles together in order to create a national picture of well-being at the LGA level and more importantly to further analyse relative welfare across the geodemographic typologies.

4.1 Standardised Welfare Scores for Local Government Areas

The first step in the process of computing the composite indicator was to calculate for each LGA and poverty quintile, the number of households per every 1000 households as follows:

$$T_q = \frac{1000 \times W_q}{N_{LGA}}$$

Where

T_q represents the number of households per 1000 households in the LGA in quintile q

W_q represents the households in the LGA belonging to quintile q

N_{LGA} represents the total number of households in the LGA

The next step was to see how each LGA performs (P_q) within each quintile. To achieve this, we related the statistics for each LGA and quintile with the national statistic for that quintile. Hence, the number of households per 1000 households in each LGA (T_q) was related to the national values.

For every LGA, the value of T_q was divided by the national equivalent and multiplied by 100. These figures were used to assess the magnitude of performance in positive or negative terms for each quintile and LGA.

Table 3: Magnitude of Performance for Six LGAs

Geopolitical Zone	State	LGA	Q 1	Q 2	Q 3	Q 4	Q 5
North Central	Benue	Gwer West	-48	-78	-6	-67	-71
South South	Cross River	Abi	-150	-22	-25	-92	-83
South East	Ebonyi	Afikpo North	-19	34	-23	-2	45
North East	Gombe	Balanga	9	-21	98	-24	-97
North West	Jigawa	Gagarawa	84	23	29	90	-1
South West	Lagos	Ifako-Ijaiye	90	40	-14	74	93

Table 3 shows the performance magnitudes for six LGAs in each of the six geo-political zones of the country. Gwer West LGA shows a negative performance across each of the five quintiles. In quintiles 2 and 5 there are high negative performances of 78% and 71% respectively. Abi LGA shows a similar pattern but it has a higher negative performance for quintile 1 than Gwer West LGA. If you consider only quintile 5 households (Q5), Ifako-Ijaiye LGA in Lagos State outperforms the other five LGAs. However, Gagarawa LGA outperforms it when quintile 4 is considered.

The composite indicator, which we call the Standardised Welfare Scores (SWS) for each LGA, was derived by combining the five performance magnitudes. The negative values for the performance scores were eliminated by standardising the distribution for each between a range of 0 and 100.

$$P_q = \frac{R_q - R_{q(min)}}{R_{q(max)} - R_{q(min)}} \times 100$$

Where

P_q represents the standardised performance score of an LGA for quintile q

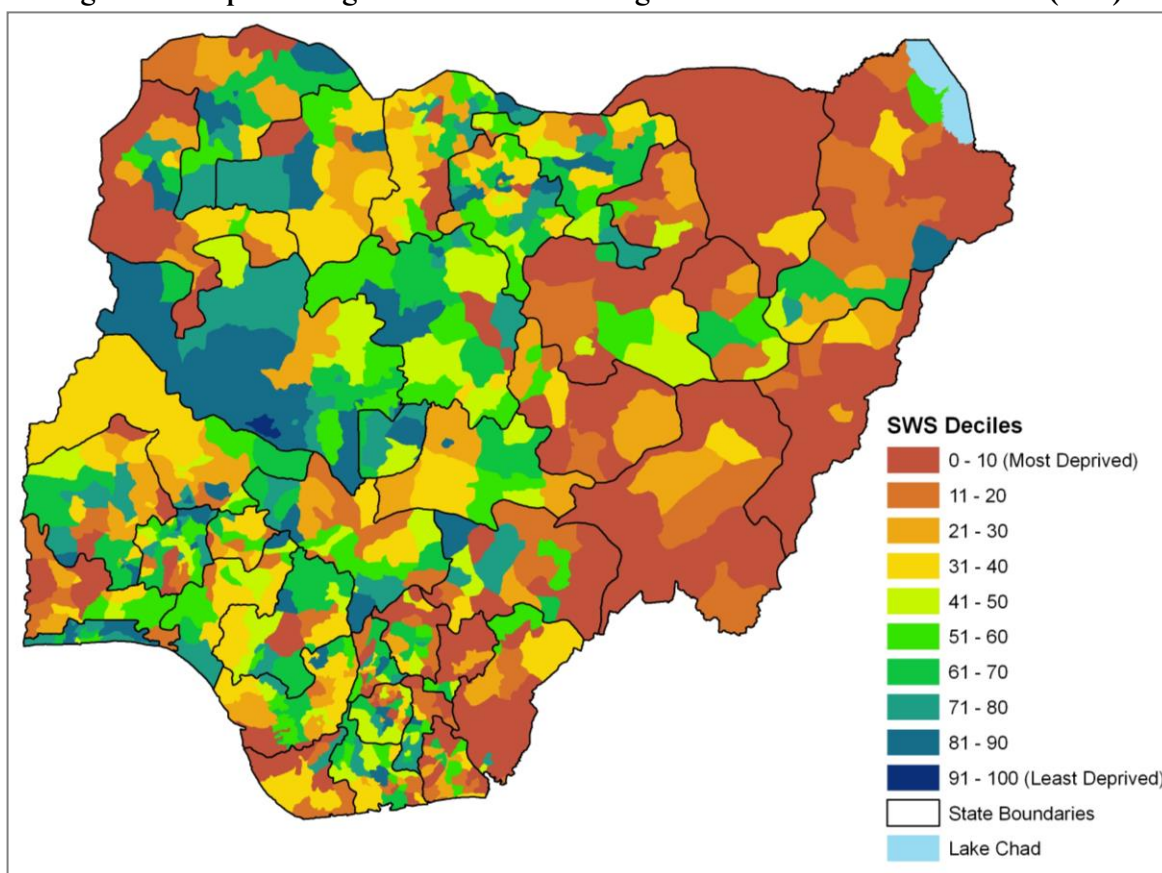
R_q represents the magnitude of performance of an LGA for quintile q

$R_{q(min)}$ represents the minimum value of R_q across all LGAs for quintile q

$R_{q(max)}$ represents the maximum value of R_q across all LGAs for quintile q

The Standardised Welfare Score (SWS) for each LGA is the arithmetic mean value of the standardised performance scores (P_q) across each of the five quintiles. We have assigned a score to each LGA in the country. In Figure 13, we have used percentiles to determine the relative standing or rank position of each of the 774 LGAs.

Figure 13: Map Showing the Percentile Ranking of Standardised Welfare Scores (SWS)

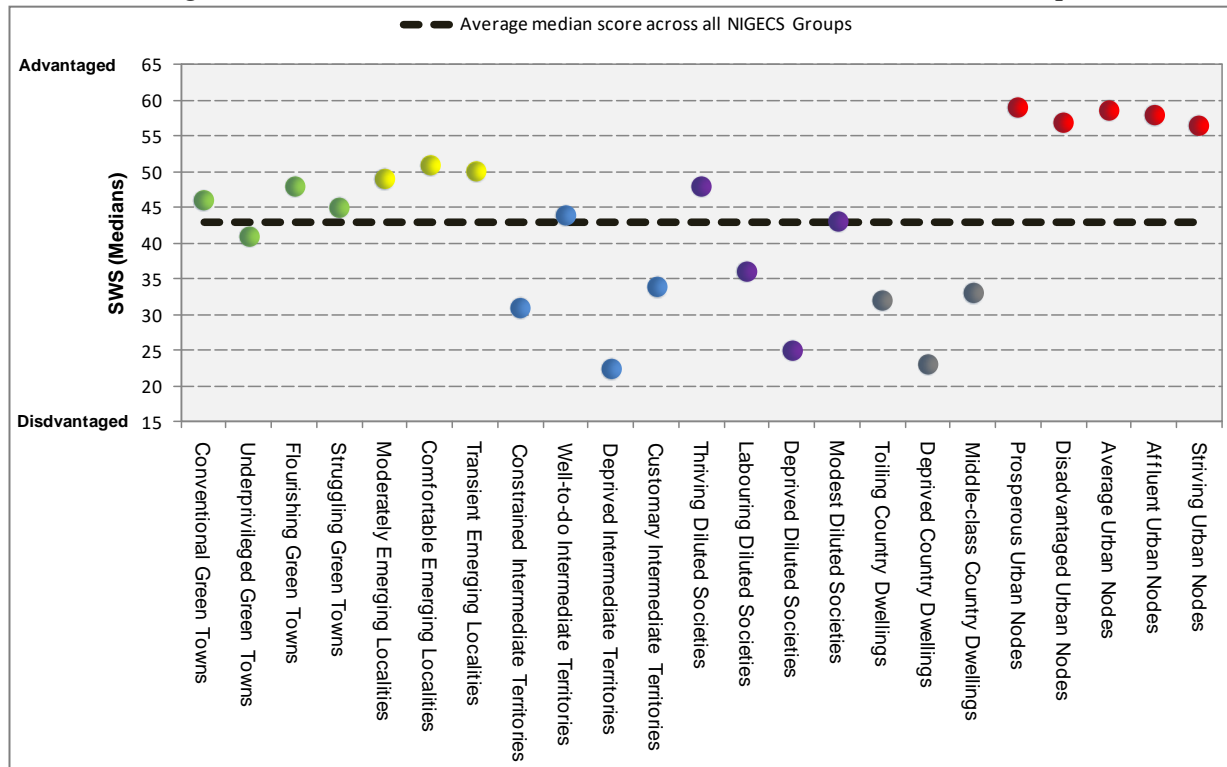


Evidence from the map shows that relative levels of deprivation are greatest in the eastern half of Nigeria and appear to concentrate in the North East. Results from our model conform to findings of earlier work done at regional and state levels (UNICEF, 2009; NBS, 2005). The local level dimension of our analysis makes it novel in many respects and more relevant to neighborhood level decision making, policy development and deployment.

4.2 Disparities in Relative Welfare

We conducted further geodemographic analysis with the SWS by linking the scores for each LGA to their respective NIGECS Groups. This enabled us calculate a median score for each NIGECS Group. In Figure 14, we illustrate the level of welfare disposition for each of the 23 Groups.

Figure 14: Differences in the Level of Welfare across the 23 NIGECS Groups



The pattern across the geodemographic clusters shows that overall level of relative deprivation is lowest for the Urban Nodes. Subsequent to the Urban Nodes, Emerging Localities experience better well-being.

The three NIGECS Groups with the greatest levels of deprivation include:

- Deprived Intermediate Territories
- Deprived Country Dwellings and
- Deprived Diluted Societies

So what are some of the key features of these areas?

Generally, they are characterised by higher dependency ratios as young children often dominate these areas. In the case of Deprived Intermediate Territories, aged people over sixty years contribute more to the high level of dependency ratio.

The level of agricultural activities within these areas is also quite high due in part to their rural inclination. However, farmers, fishermen and other agricultural cultivators rarely receive support from the government or donor agencies. Most of them purchase their agricultural supplements from open markets.

Another common feature of these areas is that many people of marriageable age are not married. Although it should be mentioned, that polygamy is quite common in Deprived Country Dwellings.

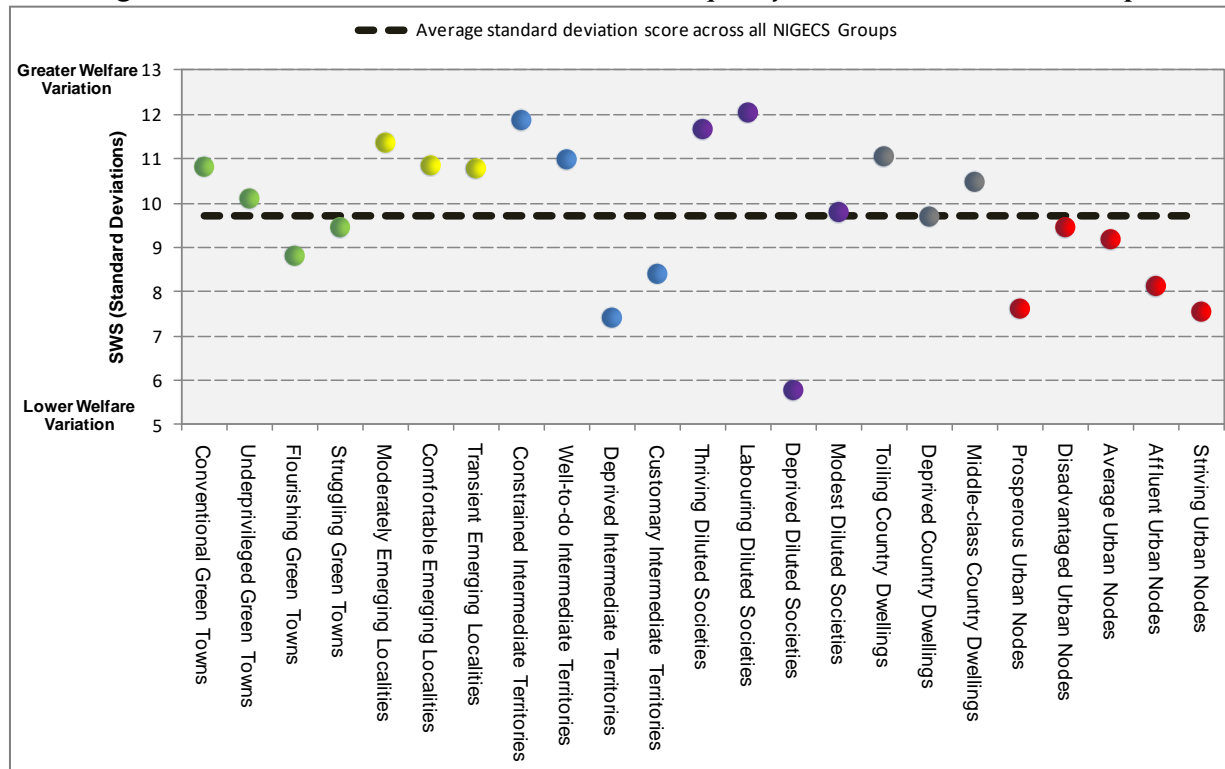
These areas are also generally characterised by low levels of educational attainment. It is quite common to find representative numbers of uneducated household heads. In Nigeria, household heads have strong control over the decisions of members of the household. Sometimes, absence of an educated household head can have a negative impact on the children. There are also significant connections between poverty and education. This also perhaps explains why some of these areas continue to experience comparatively higher levels of deprivation. In general, residents of these relatively deprived areas find it difficult meeting their basic day to day needs particularly the payment for school fees and health care services.

Another major issue contributing to *lack* within these communities is the problem of communication and access. In spite of the relative high level of proliferation of mobile phone technologies within Nigeria in recent years residents of these areas do not fully benefit. Additionally, there is a very large representation of households that spend over an hour to their nearest food market or point of public transportation. Again, all these evidences point to the fact that these areas are highly rural and socially and economically excluded from the rest of society (UNICEF, 2009).

The preceding analysis has expounded the depth and geodemographic correlates of the *haves* and *have not's* in Nigeria especially among disadvantaged community types. However, we also feel it is important to explore the variability of relative welfare amongst these geodemographic groups. Understanding this variability can be useful in providing further explanations for socio-economic inequalities in.

Standard deviation statistic is a useful measure of the level of dissimilarity within a sample (Crashaw and Chambers, 2001) and therefore can be used to appraise inequality. To explain the magnitude of inequality existing within each NIGECS Group, we aggregated the SWS for their respective LGAs and calculated within-group standard deviations of the SWS.

Figure 15: Differences in the Level of Welfare Inequality across the 23 NIGECS Groups



We illustrate in Figure 15 the variations in within-group inequality. If we compare the results of analysis shown in Figure 14 with Figure 15, we may be able to provide further explanation on the relationship between welfare and spatial inequality.

For LGAs within Green Towns, there is no clear relationship between welfare and the pattern of inequality although it is evident that the least disadvantaged Green Town (Flourishing Green Tons) also experiences the lowest level of welfare inequality.

The story for the Groups in Emerging Localities is different. For LGAs defined by these geodemographic typologies, one can deduce that the gap between wealthy and poorer households is great. All the three Groups within Emerging Localities are comparatively advantaged as shown in Figure 14 but the trend of inequality is not acceptable as illustrated in Figure 15. This again underscores the importance of treating communities differently when embarking on policy initiatives.

In the case of Intermediate Territories, there is no clear pattern in the relationship between the two statistics shown in Figures 14 and 15. However, what is apparent is that LGAs in the NIGECS Group with the most acceptable level of welfare also experience high levels of inequality. However, Deprived Intermediate Territories, which are generally disadvantaged, show the least incidence in the gap between rich and poor households.

The trend within Diluted Societies is quite similar to Intermediate Territories. However, it is pertinent to note that of all the 23 NIGECS Groups, Deprived Diluted Societies are characterised by the greatest level of welfare inequality.

Country Dwellings are generally disadvantaged; however, the inequality between households is also generally high. Indeed, amongst the three most deprived NIGECS Groups, the Deprived Country Dwellings demonstrate the greatest level of variability in well-being.

When Urban Nodes are observed in comparison with Country Dwellings, a sharp contrast is apparent. While these LGAs (Urban Nodes) tend to enjoy comparatively acceptable levels of welfare relative to the other NIGECS Groups, the pattern of inequality they demonstrate is also relatively lower unlike the Country Dwellings. Amongst the Urban Nodes, the most deprived one (Disadvantaged Urban Nodes) experiences the greatest variability in relative levels of well-being.

5 Conclusions and Policy Recommendations

We have shown that by linking ancillary datasets like measures of poverty and wealth to the Nigerian geodemographic system, it is possible to discriminate for local level evidence of inequality. Such evidence can be useful for shaping policies because it is further substantiated by spatial and a-spatial indicative factors contributing to these disparities.

5.1 Conclusions

In this study, we have shown that local level diversity in prosperity and lack exists both within and between Nigerian local communities. We have also demonstrated that the development and application of modeling techniques such as those used in this report can be helpful in interpreting geographically referenced datasets and constructing bespoke solutions for the special challenges faced by Nigerians at the LGA scale.

Exploratory spatial data analysis and modeling has been undertaken, using the Nigerian LGA Geodemographic Classification System and Profiler, in combination with secondary statistics derived from the Nigerian National Bureau of Statistics. We found that the poverty indicators analysed are more or less likely to be correlated with different community types enabling the identification of special population groups.

The broader implications of these analyses and visualisations needs to be appraised with regard to the propagation of information to positively influence change in reducing welfare inequality. We believe these techniques will also provide intelligence to validate and exemplify the aptness of resource allocation. This is of particularly relevance to funding policy programmes tied to specific community programmes aimed at tackling Nigeria's poverty challenge.

5.2 Policy Recommendations

In this final Section, our intention is not to be prescriptive. Rather, we hope to draw on an array of analysed materials and high-level stakeholder discussions to provide a number of recommendations. Areas for consideration are provided below.

1. The Nigerian LGA Geodemographic Classification System and Profiler (NIGECS) offers fresh insight to the understanding of inequality across Nigerian LGAs. The academic community is already benefiting significantly from its usage. We recommend its usage across different Government Ministries, Departments and Agencies (MDAs).
2. In line with the new drive for better appreciation of the concept of the *locale*, we sense the urgency in the need to develop similar segmentation systems at finer spatial granularities like Wards, Localities, Postcodes and Enumeration Areas. A coalition of partners including relevant MDAs, International Development Agencies (IDAs) together with the inventor of NIGECS could bring this dream into fruition.
3. Globally and in Nigeria, almost three-quarters of the poorest households are in rural communities where poverty must diminish significantly if the relevant MDG targets are to be met. Relevant MDAs and IDAs should evaluate what shares of their bilateral aid accrue to the benefit of the rural poor and adjust their programmes to address their wants.
4. Generic links between rural and urban populations in Nigeria are relatively well understood. However, there is significant dearth in knowledge of patterns of economic migration. Collaborative work should be undertaken to understudy and increase knowledge about the harmful effects of patterns of work and migration to cities where incentives from Government and IDAs appear to concentrate.
5. Due in part to data challenges, Central Government does not have a coherent perspective on the cost of pro-poor service delivery in different community types. It is unlikely that the cost of many services, including health and education, would be lower in rurally inclined communities. Lack of accurate perspectives on the differentials of such costs between community types makes it difficult to assess equity of resource allocation and ultimately judge if poverty reduction is achievable within such communities. We suggest that Central Government should determine areas where gaps are most serious and encourage State Governments to commission specific studies on community cost differentials for service delivery

6. Inadequate dissemination and low use of outputs of cutting-edge research across MDAs should be discouraged. Local and international research institutes and IDAs should improve dissemination of their research results to MDAs. Central Government should also periodically verify the levels of awareness achieved across MDAs.
7. In some scenarios, Civil Society Organisations (CSOs) have performed better than relevant MDAs in providing benefits for the poorest communities. We believe IDAs should assess how well beneficiary funding is targeted at disadvantaged populations, and promote increased funding through CSOs where they are most effective.
8. When deploying pro-poor programmes, MDAs and IDAs should work closely with benefiting communities. The benefits of participation include a higher likelihood that solutions will work better; solutions are more likely to be accepted by the communities of interest; capacity is built; imbalances of power are addressed; communities are less dependent and assume greater accountability.
9. We also believe there could be value in developing a national framework to integrate social marketing principles with socio-psychological conjecture to develop broad programmes better able to accomplish change aspirations in the drive to reduce welfare inequality. Such national agenda could be underpinned by geodemographics theory and formative research techniques.
10. Overall, networking and better partnership working should be encouraged between MDAs together with the academic and research community. Such networks are invaluable in policy advocacy because they create structures/platforms for different individuals and/or organisations to share ownership of common goals. Strategically, when a range of different groups agree and work together on an issue, impact can be enhanced significantly.

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Appendices

Appendix 1: Hierarchical Structure of the Nigerian Geodemographic Typologies

Super-groups	Super-group Labels	Groups	Group Labels	Sub-groups
1	Green Towns	1.1	Conventional Green Towns	1.1.1
				1.1.2
				1.1.3
		1.2	Underprivileged Green Towns	1.2.1
				1.2.2
				1.2.3
		1.3	Flourishing Green Towns	1.3.1
				1.3.2
				1.3.3
		1.4	Struggling Green Towns	1.4.1
				1.4.2
				1.4.3
2	Emerging Localities	2.1	Moderately Emerging Localities	2.1.1
				2.1.2
				2.1.3
		2.2	Comfortable Emerging Localities	2.2.1
				2.2.2
				2.2.3
		2.3	Transient Emerging Localities	2.3.1
				2.3.2
				2.3.3
3	Intermediate Territories	3.1	Constrained Intermediate Territories	3.1.1
				3.1.2
		3.2	Well-to-do Intermediate Territories	3.2.1
				3.2.2
		3.3	Deprived Intermediate Territories	3.3.1
				3.3.2
		3.4	Customary Intermediate Territories	3.4.1
				3.4.2
4	Diluted Societies	4.1	Thriving Diluted Societies	4.1.1
				4.1.2
		4.2	Labouring Diluted Societies	4.2.1
				4.2.2
		4.3	Deprived Diluted Societies	4.3.1
				4.3.2
		4.4	Modest Diluted Societies	4.4.1
				4.4.2
5	Country Dwellings	5.1	Toiling Country Dwellings	5.1.1
				5.1.2
		5.2	Deprived Country Dwellings	5.2.1
				5.2.2
		5.3	Middle-class Country Dwellings	5.3.1
				5.3.2
6	Urban Nodes	6.1	Prosperous Urban Nodes	6.1.1
				6.1.2
		6.2	Disadvantaged Urban Nodes	6.2.1
				6.2.2
		6.3	Average Urban Nodes	6.3.1
				6.3.2
		6.4	Affluent Urban Nodes	6.4.1
				6.4.2
		6.5	Striving Urban Nodes	6.4.3
				6.5.1
				6.5.2

For comprehensive descriptions and detailed profiles of the typologies, please see: www.nigerianlgaclassification.com

Glossary

AFRIHERO	African Higher Education and Research Observatory
CLG	Communities and Local Government
CSO	Civil Society Organisation
GLOSSTRA	Global Strategic Services and Training LTD
IDA	International Development Agencies
IMD	Index of Multiple Deprivation
LGA	Local Government Area
MDA	Ministries, Departments and Agencies
MDG	Millennium Development Goals
NBS	National Bureau of Statistics
NIG ECS	Nigerian LGA Geodemographic Classification System and Profiler
NPC	National Planning Commission
OECD	Organisation for Economic Co-operation and Development
OSSAP-MDGs	Office of the Senior Special Assistant to the President on MDGs
SWS	Standardised Welfare Scores
UNICEF	United Nations Children's Fund

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